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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/456,665	12/09/1999	TADAO KIKUMOTO	230980.0213	6748

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EXAMINER

NOLAN, DANIEL A

ART UNIT	PAPER NUMBER
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2654

DATE MAILED: 01/29/2004

10

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/456,665

Applicant(s)

KIKUMOTO, TADAO

Examiner

Daniel A. Nolan

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-10, 12-15, 17-20 and 23-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-7 and 12-15 is/are allowed.
- 6) ☒ Claim(s) 8-10, 17 and 23-25 is/are rejected.
- 7) ☒ Claim(s) 18-20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 December 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5,6,7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. The indicated allowability of claim 24 is withdrawn in view of the amendments to the claim and subsequent newly applied reference to Suzuki²⁴⁰. Rejections based on the newly cited reference follow.

Response to Amendment

3. The reply filed 05 January 2004 was entered to the following effect:
 - The title was changed as indicated and the objection is withdrawn as satisfied.
 - The specification was changed as indicated and all objections are withdrawn.
 - Claims 1, 11, 16, 21 and 22 are cancelled and the rejections are withdrawn as moot, understanding that the 8th line of page 19 should be "claims 1, 11, 16, 21 & 22."
 - The claims were changed as indicated and the objections withdrawn as satisfied.

The extant claims have been examined on the merits.

Response to Arguments

4. Applicant's arguments filed 05 January 2004 have been fully considered but they are not persuasive.

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- With regard to claim 8, the feature that *mark addresses designating a start point at zero-crossings* is disclosed by Chiba (column 16 lines 16-18) and the rejection is maintained.
- In response to applicant's argument that Suzuki^{'154} *does not change sound quality*, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).
- With regard to claims 23 and 25, applicant's argument that different formats are not disclosed, Suzuki^{'240} (column 68 lines 1-16) designates separate and distinct *compression* and *stretch/expanding processes* that will obviously produce different respective formats in the prior art referenced.

Claim Rejections - 35 USC § 103

Suzuki^{'240}, Suzuki^{'154}, Kageyama et al, Chiba & Suzuki^{'480}

5. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over (U.S. Patent 6,169,240 B1) in view of Suzuki^{'154} (U.S. Patent 5,566,154) and further in view of Kageyama et al (U.S. Patent 5,412,152 A) and further in view of Chiba (U.S. Patent 5,675,709) and further in view of Suzuki^{'480} (U.S. Patent 4,679,480).

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6. Regarding claim 8; Suzuki^{'240} reads on the feature of *generating compressed and expanded waveform* and (column 5 lines 40-42) *dividing the waveform*. Suzuki^{'240} (column 4 lines 65-68) also reads on the feature of *receiving position data including a plurality of time points* (column 17 lines 38-40) *indicating when waveform data is to be read out from the plurality of frequency band-divided waveforms, and position information elements* (column 17 lines 44-45) *indicating a particular location in the plurality of frequency band-divided waveforms corresponding to each time point* and (with 111 in figure 2) reads on the feature of *generating at least one processed waveform from each frequency band-divided waveform according to the* (claim 39 lines 44-45) *position data and at least one compression & expansion format* (column 69 lines 14-17).

Where Suzuki^{'240} is silent on the nature being *frequency band-divided*, but Suzuki^{'154} (column 9 lines 18-33 & column 13 line 53) reads on the feature of *frequency band-dividing the original waveform data to produce a plurality of frequency band-divided waveforms* which would have made it obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method and/or teachings of Suzuki^{'154} to the device/method of Suzuki^{'240} so as to maintain the correlation of bandwidth with frequency divisions during coding.

Furthermore, Suzuki^{'240} is silent on the detailed specific features of *creating waveform by combination*. Kageyama et al (column 7 lines 21-47) reads on the feature of *superimposing a plurality of processed waveforms generated from all frequency band-divided waveforms to form the compressed and expanded waveform* which would

have made it obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Kageyama et al to the device/method of Suzuki so as to provide an advantage in waveform controllability.

Suzuki^{'240} reads on the feature of *generating at least one processed waveform from each frequency band-divided waveform* (column 5 lines 40-42) but is silent on the issue of *zero-crossing parameters*. Chiba (111 in figure 13) reads on the feature of *mark addresses that designate a starting point at zero-crossings of waveform segments* (column 15 lines 4-18') which would have made it obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Chiba to the device/method of Suzuki as a reliable indication of a transition in a sound signal.

Suzuki^{'240} is also silent on the subject of *pitch determining read-out speed*. Suzuki^{'480} (claim 9 lines 20-22) read on the feature of *receiving pitch data indicating a read-out speed of the waveform portions which would have made it obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Suzuki^{'480} to the device/method of Suzuki^{'240} so as to prevent the pitch from being changed by processing.*

Suzuki^{'240} reads on the feature of reading out portions of *at least one waveform segment at the read-out speed at every time point* (column 17 lines 38-40) *of the frequency band-divided waveform, the portions of at least one waveform segment comprising waveform data starting at the mark address* (column 17 line 62) *associated with the waveform segment corresponding to the time point* (column 6 lines 29-40),

sequencing consecutive portions of at least one waveform segment to generate a processed waveform from the frequency band-divided waveform.

7. Regarding claim 9, the claim is set forth with the same limits as claim 8.

Suzuki^{'240} (column 34 lines 23-29) reads on the feature of *repetitively reading out portions of at least one waveform segment when a 1st interval between addresses designated by the plurality of position information elements is less than a 2nd interval between addresses in the plurality of mark addresses.*

8. Regarding claim 10, the claim is set forth with the same limits as claim 8.

Suzuki^{'240} (2nd-6th lines, claim 42) reads on the feature of *jump reading out portions of at least one waveform segment when a 1st interval between addresses designated by the plurality of position information elements is greater than a 2nd interval between addresses in the plurality of mark addresses.*

Suzuki^{'240}, Suzuki^{'154}, Kageyama et al & Suzuki^{'478}

9. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Suzuki^{'240} in view of Suzuki^{'154} and further in view of Kageyama et al and further in view of Suzuki^{'478} (U.S. Patent 5,347,478).

10. Regarding claim 17, the claim is set forth with the same limits as claim 16.

Suzuki^{'240} does not mention *time windows* and, while Suzuki^{'154} does (column 12 lines

55-59), neither reference employs them in *multiplying waveforms*. Suzuki^{'478} (column 24 lines 1-3) reads on the feature of *multiplying each processed waveform with a level-controllable time window*;

Suzuki^{'240} does not mention filtering for frequency, while Suzuki^{'154} does (column 15 lines 58-59) reads on the feature of *filtering at least one of the plurality of processed waveforms generated from the plurality of frequency band-divided waveforms according to a frequency band of the frequency band-divided waveform associated with each processed waveform...* which would have made it obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Suzuki^{'154} to the device/method of Suzuki^{'240} so as to calculate energies in every band.

Suzuki^{'478} (column 23 lines 39-40 and column 45 lines 39-46) reads on the feature of *summing the processed waveforms to form the compressed and expanded waveforms*. It would have been obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Suzuki^{'478} to the device/method of Suzuki^{'240} so as to perform data reduction after compression processing.

Suzuki^{'240} & Kageyama et al

11. Claims 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki^{'240} in view of Kageyama et al.

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12. Regarding claim 23, Suzuki^{'240} reads on the feature for a *compression & expansion means with which the plurality of frequency band-divided waveforms are apportioned to at least two kinds of compression & expansion formats* (shown to be distinctly separate in column 68 lines 1-16, further providing for the *combination of all or some of several* in column 52 lines 5-10) *and each of the plurality of frequency band-divided waveforms are compressed and expanded in a direction of a temporal axis by an identical amount* (column 67 line 16).

While Suzuki^{'240} reads on processing *in the direction of the temporal axis* (column 1 lines 11-12), the reference is silent on the detailed specifics of *creating waveform by combination*. Kageyama et al (column 7 lines 21-47) reads on the feature of a *superimposing means in which, by superimposing the plurality of compressed and expanded frequency band-divided waveforms, an original waveform that has been compressed or expanded in the direction of the temporal axis is formed*. It would have been obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Kageyama et al to the device/method of Suzuki so as to allow waveform control.

13. Regarding claim 24, the claim is set forth with the same limits as claim 23.

Suzuki^{'240} reads on the feature that *executes compression & expansion processing with a processing period that is as long as the frequency band-divided waveform which possesses the waveform component of a low frequency band in the plurality of*

frequency band-divided waveforms, and forms compressed and expanded waveforms that correspond to the frequency band-divided waveforms. (column 68 lines 1-16).

Allowable Subject Matter

14. Claims 2-7 and 12-15 are allowed.

15. Claims 18-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

16. The following is a statement of reasons for the indication of allowable subject matter:

- The present invention is directed to compressing and expanding waveforms using two different format techniques to minimize quality degradation.
- Claims 2 and 18 identify the uniquely distinct features of "...reading out 1st waveform from the frequency band-divided waveform of repeated cycles associated with the cycle corresponding to every other time point and waveshaping; and reading out 2nd waveform data from the frequency band-divided waveform of repeated cycles starting at the opening and starting address associated with the cycle corresponding to every other time point that does not coincide with the reading out of the 1st

waveform data, and waveshaping the 2nd waveform data with the envelope to form a 2nd processed waveform."

- Claim 5 identifies the uniquely distinct features of "reading out successive 1st waveform portions from the frequency band-divided waveform at the read-out speed at every other time point; and reading out successive 2nd waveform portions from the frequency band-divided waveform at the read-out speed at every other time point that does not coincide with the reading out of successive 1st waveform portions, waveshaping the 1st and 2nd read-out waveform data with the envelope to form processed waveforms.
- Claim 12 identifies the uniquely distinct feature, "... sampling the original waveform data at a sampling frequency F_s ; and dividing the original waveform data into N frequency band-divided waveforms, wherein the Mth frequency band-divided waveform, where M is an integer varying from one to N, is sampled at a sampling frequency equal to F_s divided by $2^{(M-1)}$, and has a frequency band ranging from F_s divided by $2^{(M+1)}$ to F_s divided by $2^{(M)}$.
- With respect to all the above-indicated features, the closest prior art of Suzuki discloses the initial waveshaping process but fails to anticipate or render the above underlined limitations obvious.
- Claims 3-4, 6-7, 13-15 and 19-20 depend from claims that have been found to be allowable and so are they allowable as a consequence.

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

18. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Daniel A. Nolan at telephone (703) 305-1368 whose normal business hours are Mon, Tue, Thu & Fri, from 7 AM to 5 PM.

If attempts to contact the examiner by telephone are unsuccessful, supervisor Richemond Dorvil can be reached at (703)305-9645.

The fax phone number for Technology Center 2600 is (703)872-9314. Label informal and draft communications as "DRAFT" or "PROPOSED", & designate formal communications as "EXPEDITED PROCEDURE". Formal response to this action may be faxed according to the above instructions,

or mailed to: Mail Stop AF (or CPA, etc. – see Official Gazette, 04 November 2003)
 P.O. Box 1450
 Alexandria, VA 22313-1450

or hand-deliver to: Crystal Park 2,
 2121 Crystal Drive, Arlington, VA,
 Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to Technology Center 2600 Customer Service Office at telephone number (703) 306-0377.

Daniel A. Nolan
Examiner
Art Unit 2654

DAN/d
January 25, 2004



RICHEMOND DORVIL
SUPERVISORY PATENT EXAMINER